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THE
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Rail Road News

Road to the Pacific.

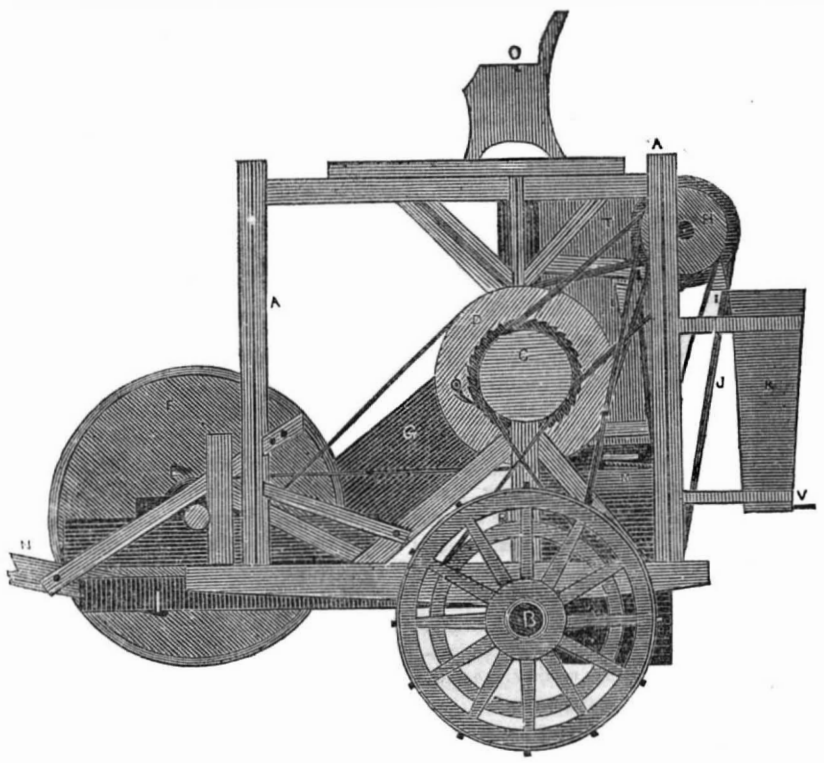
The subject of a Railroad to the Pacific is now engaging much of the public attention. That a railroad from the United States to the future States on the Pacific, will have to be built at no distant day, no one doubts, but the way to do this, and the most proper route to be adopted, are subjects which will require no small amount of reflection, examination, aye, and exploration too. We take no part in the discussion of this or that scheme to build an Atlantic Pacific Railroad. We believe that the times are not yet ripe for its construction, and it will be better to wait a year or two before any scheme is finally adopted. If it would be profitable to have a road built to the Pacific—that is, if it can be demonstrated, that it will pay a fair profit, there is plenty of capital to build it, and would build it. If it would not pay, then what is the use of building it. The undertaking is a great one, and it should be viewed in all its bearings, with calmness and impartiality, and this cannot be done until we have more light upon the subject. Has there been a survey of any route made yet—we mean a survey by civil engineers, who have planned and calculated the whole expenses of bridges, inclines, &c. ? Not one. We cannot give an opinion upon the expense nor the difficulties of building such a road, nor can any other person that we know of. It will require the survey of three different routes, by competent engineers, to produce a work upon which we can safely rely for accurate information, regarding the exact amount of funds required to construct such a road.

There is another point upon which information is desired, viz., its payability. New York and Boston would be little benefitted by it as cities—in fact it would not be of any benefit to them at all, as sea-ports. Is there an underwriter here who supposes for a moment that he could bring tea cheaper from Canton to this city, by first carrying it to San Francisco, unloading it, and then bringing it by railroad across the Continent, than merely to ship it direct by the longest route around the Cape of Good Hope to this city ? We trow not. Neither France nor Egypt have yet become depots for the British India merchant trade, although the overland routes by them is much shorter than by a Pacific Railroad. We believe that a railroad will be absolutely necessary in two years, for the union of our Atlantic with our Pacific States, but as far as it regards the splendid and alluring prospects that have been held out by some, to absorb all the East India trade of Europe by such a railroad, it is all hypothetical.

Reduction of Fare on the Jersey Railroad.

We see it stated in some of our exchanges, that the Camden and Amboy Railroad Company have reduced their fare to three cents a mile. We believe that this company see the necessity of [illegible] wise measures. The public are in[illegible] to "A Citizen of Burlington" for th[illegible]

REMBERT'S REAPING, THRESHING, AND SEPARATING MACHINE.---Figure 1.

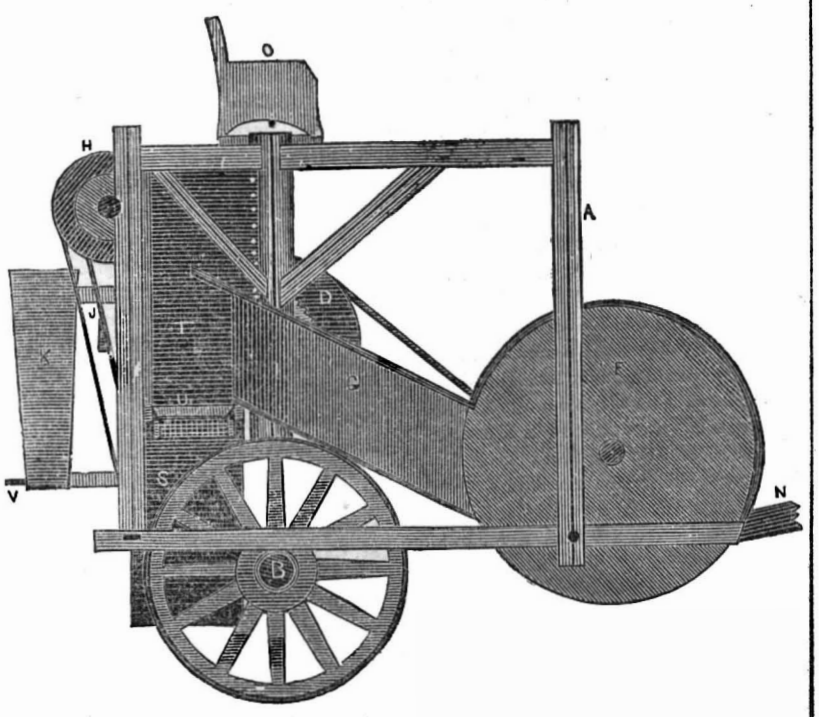


This machine is the invention of Mr. S. S. Rembert, of Memphis, Tennessee. Its design and object is to cut the grain, thresh, and separate it on the field, at one operation. For this purpose he has combined machinery to execute three different operations, and all to be done by drawing the wagon, or apparatus, —the whole machinery receiving motion from the wagon wheels. Mr. Rembert has for a long time devoted his attention to the perfecting of his machinery, which is now brought to a workable and efficient state, and he has taken measures to secure it by patent, believing that it will prove highly useful, and come into general use.

As it takes a number of cuts to explain the construction and operation of this machine, we are obliged to extend the description to the invention page.

Figure 1 is a side elevation, showing one side of the machine, and figure 2 a side elevation of the opposite side. On the other page is a back or end view in figure 3, and figure 4 is a section showing the thresher and a side view of the cutting scythe, or reaping blade. The same letters refer to like parts on all the

Figure 2.



figures, and this is the reason why we have to refer to the cuts on the other page in this introduction. A is a stout frame fitted up on the wagon, with upright, transverse and diagonal braces to support the machinery. B is the wagon wheel; it has pins or projections on its periphery, to make it adhere to the ground while passing over it. C is a ratchet pulley on a drum, which is driven by a band from a pulley, R, on the inside of the wheel B. D is a pulley on the drum of C, from which passes a band over the pulley, E, to drive the threshers, which move in the inside of the case, F. The front of this case is open, and at its bottom, projecting outwards, there is the scythe or cutting blade, while the threshers come down and wipe the straw inwards, bending it over the cutting scythe and biting it inwards. G is the trunk up which the

(Continued on Fourth Page.)

Useful Receipts.

The Chlorides of Gold.

Great difficulty has hitherto occurred in preparing the chloride of gold, of the yellow and red colours, perfectly soluble in water, and without suffering reduction. The following processes are recommended for this purpose :

1st. In order to prepare the yellow salt of gold, take aqua regia prepared with three parts of hydro-cloric acid, one part of nitric acid, and one of distilled water. Then put one part of pure gold into a porcelain capsule with a plate of glass and heat it in a salt water bath, the heat being continued till red vapours cease; the cover is then to be removed, and if the gold is not entirely dissolved, some aqua regia is to be added to it, the capsule being again covered, the heat is to be continued till vapor ceases to appear; the glass plate must then be removed and replaced by folds of blotting paper, the heat being continued in the bath, until a glass rod, upon being immersed in the capsule, becomes covered with yellow solid chloride of gold.

The capsule is then to be removed from the salt water bath and the chloride of gold soon crystallizes in small prismatic crystals, of a fine yellow colour, with an orange tint. The chloride thus obtained is perfectly soluble in water without reduction ; it is successfully employed in Daguerreotype and other operations.

The red chloride of gold (res-chloride) is prepared in the same manner, except that the aqua regia employed is prepared with two parts of hydro-chloric, and one part of nitric acid.— the operation is not commenced by acting upon gold with excess of aqua regia on a sand bath, the salt water bath not being used until the gold is entirely dissolved ; the remainder of the operation is conducted in the same manner as that for the yellow chloride.

To soften Putty, and remove Glass without Breaking.

As it is often of importance to glaziers, and others to remove glass from frames without breaking it, they will be glad to know that a very strong solution of caustic potash, or caustic soda, applied round the panes for a few hours by laying upon them an old rag dipped in the solution, will have the desired effect.

[The potash combines with and separates the oil from the whitening of the putty, thus forming a soap.

To Preserve Leeches.

At the bottom of the jar containing the leeches, place a layer about half an inch thick of common sand, well washed to remove any extraneous matter.

Ground Coffee should be kept in a tight vessel ; if this is not done, it soon loses its fine flavor—the aroma disappears with its volatile oil.

Health--How to Preserve it.

Medicine will never remedy bad habits. It is utterly futile to think of living in gluttony, intemperance, and every excess, and keeping the body in health by medicine. Indulgence of the appetite, and indiscriminate dosing and drugging, have ruined the health and destroyed the life of more persons than famine, sword and pestilence. If you will take advice, you will become regular in your habits, eat and drink only wholesome things, sleep on a mattress, and retire and rise very regularly.— Make a free use of water to purify the skin, and when sick take counsel of the best physician you know, and follow nature.

We have received a short account of the Fair of the Baltimore Institute, from a correspondent. It could not appear this week.

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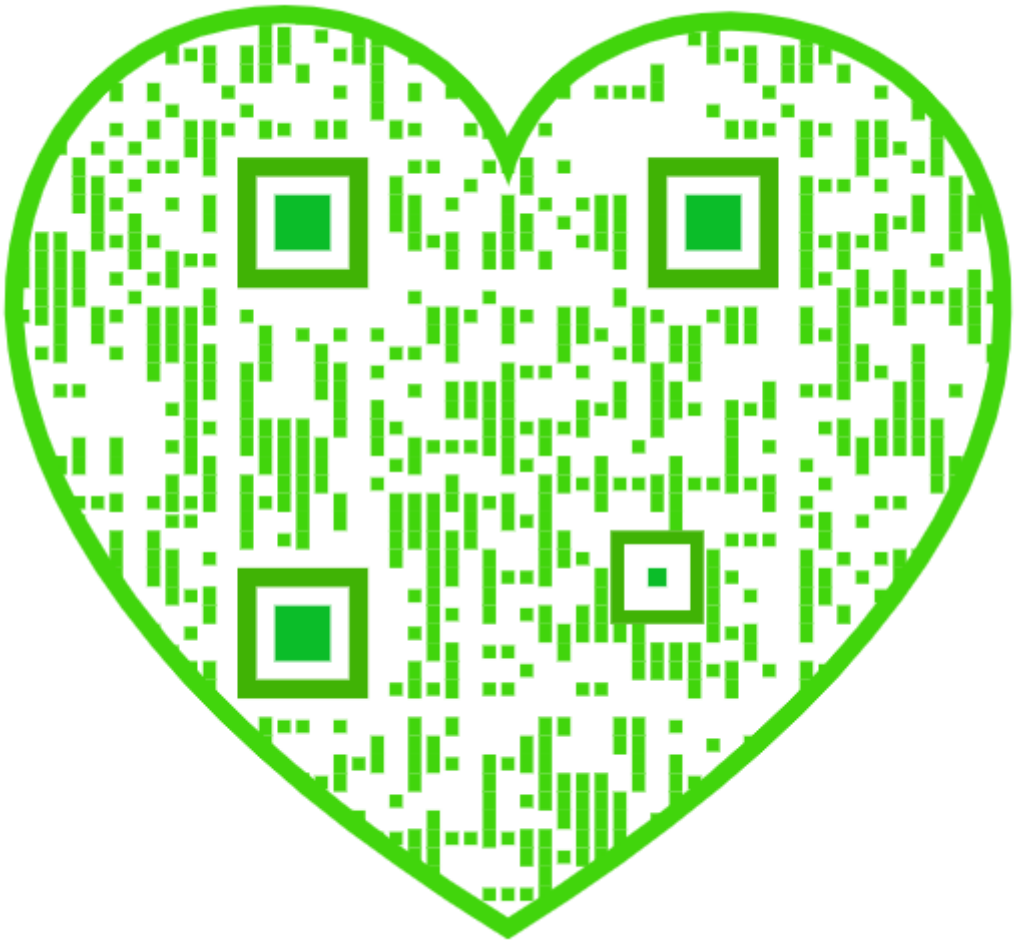

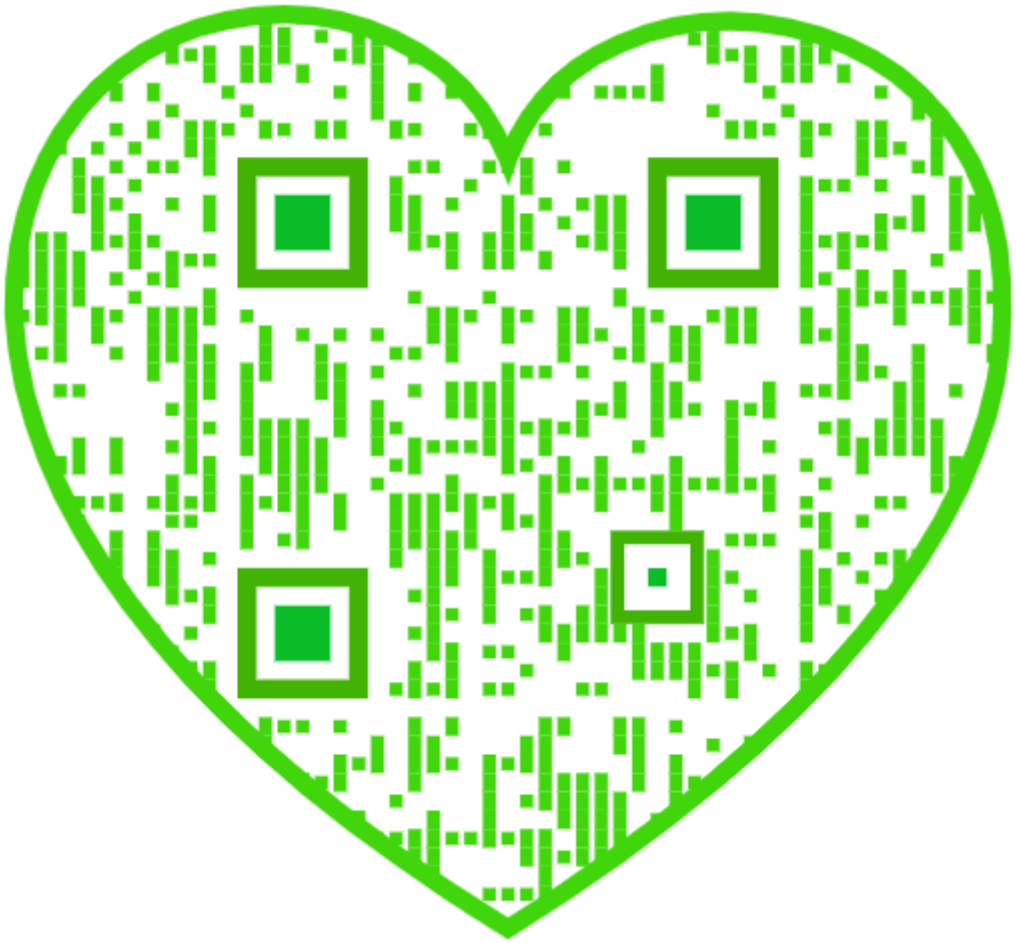

Miscellaneous.

Surgical Operation.

A very difficult and skilfully performed surgical operation is noted in the New Orleans Bulletin. The subject was a negro girl about 15 years of age. For some ten years past the girl has had a bony tumor growing on the side of the lower jaw, which had increased to such a size that it almost prevented the utterance of speech. She was placed under the care of Dr. Stone, who, with his assistant, Dr. McIlheny, performed the required operation in the most successful manner. Having been put under the influence of chloroform, a semi-circular incision was made from the centre of the chin, and extending over the cheek, as far back as the point of the jaw nearest the ear. The whole of the left side of the face was then laid bare by the knife, and exposed to the bone. Dr. Stone then, with the saw, divided the bone through the centre of the chin, and through what is called the "symphysis," a point about an inch from the joint near the ear; and then, with a surgeon's chisel, took the piece out. The whole operation lasted about eight minutes, and the wound was bandaged properly before the patient awoke from her sleep.—Without any assistance, she got up from the table, and walked to her room, perfectly ignorant of what had been done until informed of it by the servants. Dr. McIlheny followed her up stairs, in a few minutes, and found her sitting in a chair, and enjoying with great glee a recital of the operation. The weight of the tumor with the bone was about ten ounces. The girl has since been pronounced entirely cured.

Handsome Editor.

We noticed at the Fair of the American Institute several splendid specimens of the "Daguerre Art," executed by Messrs. Roots, of Philadelphia. We also noticed a large swarm of ladies constantly in attendance, expressing much admiration. Our curiosity had become somewhat excited to know the cause of the immense attraction; which, however, was soon gratified upon discovering the likeness of Thomas Fitzgerald, Esq., the able editor of the "City Item." We have heard considerable said in regard to "Fitz's" beauty, but never supposed he was perfectly irresistable until we saw his daguerreotype. We would compliment Messrs. Roots, if they needed it.

Turkish Plan of Curing Founder in Horses.

The following is a singular circumstance, as related by the N. A. Farmer:—The late Commodore Porter, when Envoy of the United States at Constantinople, had a horse cured of founder by a Turkish farrier in the following manner: The Turk said the horse must be bled in the inside of the deceased leg. He put a nipper on his nose to keep him steady—then took up the left leg, and crossing it over the right, gave it to an attendant; he then struck his lancet into the vein, a little above the fetlock joint, and took from it about three and a half pounds of blood. The vein bled freely. He now said he had taken enough; he then went to the very opposite side of the leg, and striking his lancet into a vein above the knee-joint, a single drop drop of blood exuded, and both that and the first opened vein instantly ceased bleeding. There may be no novelty in this, but it certainly astonished me to find that opening two veins in the same limb stopped both from bleeding; such, however, is the fact, for I witnessed it. He desired that the horse should rest the next day—that he should then be rode with great violence until he was in a profuse perspiration—the diseased limb then to be rubbed with wet salt—(to which I added a pint of hot brandy)—then rubbed dry, and then walked about until cool, and covered with blankets; the same process to be repeated next day—which was done, and all lameness from that time disappeared; the horse the third day was perfectly well.

Bishop Chase told his congregation a short time since, in one of his sermons, 'that there was among his females auditors corset boards sufficient to shingle a hog-pen."

Sponge Fishing.

Within the past month our city has exhibited the spectacle of great numbers of itinerant sponge pedlars. Pieces which used to be sold in the shops for one shilling, were sold by these pedlers for 3 cents. The first pedlars appeared to be Mediterranean French. All our finest sponges come from the Mediterranean, and the greatest sponge fishers are the Greeks.

The sponge of commerce is found attached to rocks in various depths between three fathoms and thirty.—When alive it is of a dull bluish black above, and of a dirty white beneath. There are several qualities, possibly indicating as many distinct species.

The sponge divers go in little fleets of caiques, each of six or seven tons burden, and manned by six or eight men. The season for the fishery lasts from May until September. All the men dive in turn. They remain in the water from one to three minutes. They descend to the bottom at various depths, between five fathoms and twenty, or even, though rarely, thirty. Very few of the divers can descend so deep as the above-named depth, and it is doubtful whether they can work in such case. In deep water, a rope weighed by a stone is let down, by which the divers ascend when they have gathered the sponges. They carry nothing about their person except a netted bag, which is attached to a hoop suspended round their necks; in this they place the sponges. A sponge is dried in the sun after being cleansed in sea-water; fresh water rots it and turns it black. The slimy or animal matter is stamped out by the diver's feet. When dried, the sponges are strung in circles.

The sponge fisheries were probably conducted among the ancient Greeks as they are now. Aristotle distinguishes sponges under two heads, those that might be cleaned, and those which could not. Of the last, he states that their substance was compact, but perforated by large canals. They were more viscous than other sponges, and when dried remained black. The description exactly applies to the common coast line sponges of the Ægean, useless for economic purposes. His account of the sponges of commerce is more detailed. He distinguishes three varieties: those which were lax and porous those of thick and close texture; and a third kind, called sponges of Achilles, finer, more compact, and stronger than the others. These last were rarest, and used to be placed in helmets and in boots, as projections from pressure for the head and feet. They all grow on the rocks, adhering not by one point only, nor by the whole surface, but by the coast which became suddenly deep.—He attributes the superior fineness of texture in these deep-sea kinds to the greater uniformity of temperature of water in such places.—When alive, and before they are washed, they are black. Their canals are often inhabited by little crustacea.

Expedition of Sir John Franklin.

The Cleveland Plaindealer, of Oct. 5, has a letter dated "St. Marie River," September 28th, announcing the arrival or Sir John Richardson, from the fruitless search after the lost Polar expedition of Sir John Franklin, of whose dreadful fate among the ices of the Arctic Ocean, there is left little or no room to doubt. Sir John Richardson having failed to find even the remotest clue to the Franklin Expedition, is now on his way back to England. He left there in April, 1848, and from the Sault Ste. Marie has made a voyage in canoes, and boats, and overland, a distance of three thousand and five hundred miles and back, by way of Lake of The Woods, Makenzie's River, &c. After reaching the Arctic Ocean, they travelled five hundred miles along the coast. He speaks confidently of the existence of a northern passage; practicability, he says, is another question, the summers being only from 38 to 60 days long. He goes by the way of Toronto and Montreal to Boston.

An Oil Spring has been discovered in the country inhabited by the Chickasaws, at a water-fall near Fort Wachita. It is similar to British oil, exudes from a rock overhanging the falls, and is said to have effected astonishing cures of rheumatism and kindred diseases.

A Polar Bear.

A Polar Bear was recently shot, on the coast of Labrador, by the crew of the Lord Exmouth of Halifax. The animal was stuffed and sent to Boston.

Two of the crew of the Lord Exmouth were cruising in a boat, when they discovered the bear upon the Island. They immediately returned to the vessel, took in six others of the crew, and eight muskets, with which they returned to the vicinity of the Island. Upon approaching within gun-shot, the bear perceived and came towards them. The first discharge wounded him in several places, but did not in the least check his approach. Finally however, after receiving quite a number of balls in his body, he turned and slowly retreated, making his attackers shudder by the fierceness of his howling. It was then proposed by Dixon that they should land upon the Island, in order to consummate the victory. To this the majority of the crew demurred from fear. Three of the crew, however, including Dixon, landed, having armed themselves with two loaded guns apiece. The bear, as soon as he saw them upon land turned about and began to approach, when six more balls were put into his body without apparently checking his approach.—Before, however he got near enough to harm them, Mr. Dixon succeeded in loading another gun. At this moment the bear presented his side which he had not done before, and a bullet was lodged in his throat which caused the animal to fall, It was more than half an hour however before they dared to approach, as every few minutes the bear would by a desperate effort, get upon his feet with the intention of reaching them. After it was deemed safe, they ventured near, and found him to be dead. He was, with considerable labor, taken to the vessel. and found to be sixteen feet long and to weigh 2200 pounds. Five hundred pounds of fat were taken from him in Halilax and it was found that sixteen balls had lodged in his body. The contest lasted for an hour and a half, and the roars of the infuriated animal might have been heard for many miles.

The Vatican at Rome.

The Vatican, which crowns one of the seven hills at Rome, is an assemblage or group of buildings, covering a space of 1200 feet in length, and 1000 feet in breadth. It is built upon the spot which was occupied by the gardens of Nero. It owes its origin to the bishops of Rome, who erected an humble residence on its site, in the early part of the sixth century. Pope Eugenius III, rebuilt it on a magnificent scale, about the year 1150. A few years afterwards, Innocent II. gave it up as a lodging to Peter II., King of Arragon. In 1305, Clement V., at the instigation of the King of France, removed the Papal see from Rome to Avignon, when the Vatican remained in a condition of obscurity and neglect for more than seventy years. But soon after the return of the pontifical court to Rome, an event which had been so earnestly prayed for by the poet Petrarch, which finally took place in 1376, the Vatican was put in a state of repair, again enlarged, and it was thenceforward considered as the regular palace, and residence of the popes, who, one after the other, added fresh buildings to it, and gradually enriched it with antiquities, statues, pictures, and books, until it became the richest repository in the world.

Its library was commenced fourteen hundred years ago. It contains 40,000 manuscripts, among which are some by Pliny, St. Thomas, St. Charles, Borromeo, and many Hebrew, Syriac, Arabian and Armenian Bibles. The whole of the immense buildings composing the Vatican, are filled with statues, found beneath the ruins of ancient Rome; with paintings, by the great masters, and with curious medals, and antiques of almost every description. When it is known that there has been exhumed more than 60,000 statues from the ruined temples and palaces of Rome, the reader can form some idea of the riches of the Vatic an.

"Can you tell us when the cars leave the depot?" "As soon as the seats are all taken, that will make the *car-go*."

Mr. Taylor, a correspondent of the Tribune, saw children digging gold in the streets of San Francisco.

The Scientific American.

The small size of the "Western World" prohibts us from giving our readers all the valuable information that we could wish. We can however often inform them where they can find the best and most reliable. The "Scientific American" always is full of most interesting and valuable matter upon scientific subjects. It contains a complete account of all new inventions, especially those for which a patent had been taken. In fact they have the best means for obtaining information on this subject of any paper in the country. When so many new inventions are being brought forward, it is often of great importance to the discoverer to know whether he has been forstalled, and thus save time and expense. We have frequently known instances where individuals have sent models to Washington, only to find that patents have been already issued for the same invention.

It contains a full account of scientific meetings in this and other countries, and chronicles all improvements in manufactures, agriculture, &c. &c. It is published weekly by Messrs, Munn & Co., at 128 Fulton st. New York, at the low price of $2 per annum. Our readers well know that we do not often puff any work but when we know of one that really benefits society, we feel it to be our duty to let society know it also. Number 1, Vol 5, was issued September 22. It appears in new type, and with many improvements that materially enhance its value. Back members can be obtained of the present volume, if ordered soon

[The above notice we copy from the Western World, published monthly at No. 50 Broadway, at 25 cents per year, by that prince of all good fellows Joshua F. Bridge. We are especially grateful to him for the many occasions he has taken to speak favorably of the Sci. Am. without the least hint or solicitation from us. It is always a matter of great encouragement to editors to find their labors, approved by their contemporaries. In this instance we have more than the usual acknowledgement to make as Mr. Bridge has asked nothing from us to render him under obligations to speak in our favor. Although but a young man, his articles compare favorably with Editorial experience, and are characterized by a sound and healthy morality which is much in his favor as a young editor. Success to him.

Things as they Exist.

Almost daily are we receiving orders from various parts of the Union, for *all* the back volumes of the Scientific American; or letters of enquiry reading thus: "Can you furnish me with your valuable work from the commencement?" In reply to such enquiries we are induced to make the following statement, thereby saving many the trouble of making enquiries for volumes that we cannot furnish, and ourselves the time of replying to such enquiries:

Volume 1,—Entirely out of print: not a number left.

Volume 2—*Complete* sets entirely exhausted.

Volume 3—Complete, *Bound*—A few copies only: price $3.

Volume 4—Complete, Bound: $2,75—none in sheets.

We have left a few incomplete sets of volumes 2 and 3, comprising about 50 Nos., which may be had by remitting one dollar; and we have sets of between 40 and 50, Vol. 3, which we can furnish at the above price, and also about 40 Nos. of Vol. 4, which will be furnished for one dollar.

There are but a few sets of the above volumes left, as complete as stated above, and those who order first will receive the most numbers.

The back Nos. of Volume 5 we are yet able to furnish, but at the rate they are "going off" at present, we shall be unable to send the first Nos. in a few weeks, although at the commencement of the volume 4000 extra copies were printed for the purpose or filling future demands for them.

The amount of British manufactures now exported is said to be enormous. Up to August of this year, it was twenty-five million dollars more than the same period in 1848.

The last accounts from California are rife with the still abundant supply of gold.

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For the Scientific American.

Design in the Natural World.

In the lower animals, who want both the accessory means of cleaning the eye and the ingenuity to accomplish it by other modes than the eyelids, an additional eyelid, a new apparatus is provided for this purpose. In fishes, whose eye is washed by their element, all the exterior apparatus is unnecessary, and is dismissed; but in the crab, the very peculiar and horny prominent eye would be quite obscured were it not for a particular provision. There is a little brush of hair above the eye, against which it is occasionally raised to wipe off what may adhere to it.

The forms of the bones and joints, and the tendons which play over them, afford a variety of instances of the most perfect mechanical adjustment. Sometimes the power is sacrificed for rapidity of motion, and rapidity for power. Our patella throws off the tendon, attached to it from the centre of motion, and hence adds to the power of the muscles of the thigh, which enables us to rise or leap. In the toes of the ostrich the material is different, but the mechanism the same. An elastic cushion is placed between the tendon and joint, which, whilst it throws off the tendon from the centre of motion, and therefore adds to the power of the flexor muscle, gives elasticity to the bottom of the foot. These cushions serve, in some degree, the same office as the elastic frog of the horse's hoof, or the cushion in the bottom of the camel's foot.

The web-foot of the water-fowl is an inimitable paddle; and all the ingenuity of the present day exerted to improve our steamboat makes nothing to approach it. The flexor tendon of the toes of the duck is so directed over the heads of the bones of the thigh and leg, that it is made tight when the creature bends its leg, and is relaxed when the leg is stretched out. In another class of birds, the same mechanism enables the animal to grasp the branch on which it roosts without any effort on its part.

A bird's egg consists of three parts: the chick, the yelk in which the chick is placed, and the white in which the yelk swims. The yelk is attached to the white at two points joined by a plane *below* the centre of gravity of the yelk. The chick, therefore, is always uppermost, roll the egg how you will; consequently it is always kept nearest to the breast of the mother while she is sitting.

The hexagonal form of the cells of honeycomb is proved to be that which the most refined analysis has enabled mathematicians to discover as of all others the best adapted for the purpose of saving room, work, and materials. And this form is the same in every country—the proportions accurately alike—the size the very same to the fraction of a line, the wide world over. The discovery was made about a century ago; and the instrument (the fluxional calculus,) that enabled us to find it out, was unknown half a century before that application of its powers. Yet the bee had been, for thousands of years, in all countries, unerringly working according to this fixed rule, choosing the same exact angle of 120 degrees for the inclination of the sides of its little room, which every one had for ages known to be the best possible angle, and also chose the same exact angles of 110 and 70 degrees for the parallelograms of the roof, which no one had ever discovered till the 18th century, when MacLaurin solved that most curious problem of *maxima* and *minima*, the means of investigating which had not existed till the century before, when Newton invented the calculus. The bottom of each cell on one side abuts against three on the other, and is supported by the divisions between them. It is formed of three plates meeting at an angle, and this angle has been ascertained, by a very intricate mathematical calculation, to be *precisely* that which enables the greatest strength to be attained with the least material. The celebrated mathematician, Maraldi, brought the results of his calculation to agree with the observed angle within two minutes of a degree. This near approximation has been generally considered quite close enough to establish the fact; but Lord Brougham has recently investigated the subject afresh, and shown that the bees were perfectly right and the mathematician wrong.

J. W. O.

Cingalese Jewellers and their Forges.

Albion, Oct. 1, 1849.

Messrs. Editors:—Noticing in the first number of the Scientific American a portable blast furnace, has induced me to send you the following: the Cingalese work in gold and silver with considerable dexterity and taste; and, with means that appear very inadequate, execute articles of jewelry—articles that would certainly be admired in this country, and not very easily imitated. The best jeweller requires only the following apparatus and tools:—a low earthen pot full of chaff or saw dust, on which he makes a little charcoal fire; a small bambo blow-pipe, about six inches long, with which he excites the fire, and through which the artist directs the blast of the blow-pipe; two or three small crucibles made of the fine clay of ant-hills; a pair of tongs, an anvil, two or three small hammers, a file, and, to conclude the list, a few small bars of iron and brass, about two inches long, differently pointed for different kinds of work. It is astonishing what an intense little fire, more than sufficiently strong to melt silver and gold, can be kindled in a few minutes in the way just described. Such a simple portable forge deserves to be better known; it is perhaps even deserving the attention of the scientific experimenter, and may be useful to him when he wishes to excite a small fire, larger than can be produced by the common blow-pipe, and he has not a forge at command. The success of the little Cingalese forge depends a good deal on the bed of the fire being composed of a combustible material, and a very bad conductor of heat. The smiths of Ceylon use a composition as a hone in sharpening knives, and cutting instruments, that is worth noticing. It is made of the capitia resin and corundum. The corundum, in a state of impalpable powder, is mixed with the resin, rendered liquid by heat and well incorporated. The mixture is poured into a wooden mould, and its surface levelled and smoothed while it is hot; for when cold it is extremely hard. It is much valued by the natives, and preferred by them to the best of our hones. Respectfully yours,

L. F. Munger.

Experiments on the Steam Engine.

Messrs. Editors:—Having been a subscriber to your paper some time, I have noticed some articles relative to the crank and loss of power by the use of the crank. I do not believe in any loss of power directly attributable to the crank, but I do believe in a loss of power which I call incidental to the crank; I find practically a loss, which I say is occasioned by not cutting off the steam soon enough, and exhausting soon enough, in the unexpended momentum of the reciprocating parts, at the end of the stroke, which must be counteracted by an equal amount of steam, making the loss double the amount of such unexpended momentum. I find by cutting off one quarter of the steam and beginning to exhaust before the piston arrives at the end of the stroke, a saving of fuel is made, amounting in some cases to fifty per cent., the engines working much smoother, passing the centers much easier, and the wear and tear less. Such amount of saving cannot be attributed to the expansion, as it is greater than any theory of expansion will account for. I wish to call the attention of steam engine builders to the subject,

W. S. H.

The Cotton Experiment in Australia.

A sample of cotton grown in Australia has lately been exhibited in London. It is said to be of very good quality, and superior to the average American cotton imported into Liverpool. Two varieties have been raised—one a white cotton, the other a light drab or brown cotton. The former is distinguished by a silkness of texture, which is said to be very rarely noticed in American cotton. The question has yet to be solved whether the price which could be obtained for it in England would be sufficient to pay the expenses of culture and preparing for market, and freight, &c., to England.

Shagreen.

The true oriental shagreen is essentially different from all modifications of leather and parchment. It approaches the latter somewhat, indeed, in its nature, since it consists of a dried skin, not combined with any tanning or foreign matter whatever. Its distinguishing characteristic is having the grain or hair side covered over with small rough round specks or granulations.

It is prepared from the skins of horses, wild asses and camels; of strips cut along the chine, from the neck towards the tail, apparently because this stronger and thicker portion of the skin is best adapted to the operations about to be described. These fillets are to be steeped in water till the epidermis becomes loose, and the hairs easily come away by the roots; after which they are to be stretched upon a board, and dressed with the currier's fleshing knife. They must be kept continually moist, and extended by cords attached to their edges, with the flesh side uppermost upon the board. Each strip now resembles a wet bladder, and is to be stretched in an open square wooden frame by means of strings tied to its edges, till it be as smooth and tense as a drum-head. For this purpose it must be moistened and extended from time to time in the frame.

The grain or hair side of the moist strip of skin must next be sprinkled over with a kind of seeds called Allabuta, which are to be forced into its surface either by tramping with the feet, or with a simple press, a piece of felt or other thick stuff being laid upon the seeds. These seeds are lenticular, hard, of a shining black color, farinaceous within, about the size of poppy seed, and are sometimes used to represent the eyes in wax figures.

The skin is exposed to dry in the shade, with the seeds indented into its surface; after which it is freed from them by shaking it, and beating upon its other side with a stick. The outside will then be thorny, and pitted with small hollows corresponding to the shape and number of the seeds.

When we make impressions in fine-grained dry wood with steel punches or letters of any kind, then plane away the wood till we come to the level of the bottom of these impressions, afterwards steep the wood in water, the condensed or punched points will swell above the surface in relief. Snuff-boxes have sometimes been marked with prominent figures in this way. Now shagreen is treated in a similar manner.

The strip of skin is stretched in an inclined plane, with its upper edge attached to hooks, and its under one loaded with weights, in which position it is thinned off with a proper semi-lunar knife, but not so much as to touch the bottom of the seed-pits or depressions. By maceration in water, the skin is then made to swell, and the pits become prominent over the surface which had been shaved. The swelling is completed by steeping the strips in a warm solution of soda, after which they are cleansed by the action of salt brine, and then dyed.

In the East the following processes are pursued. Entirely white shagreen is obtained by imbuing the skin with a solution of alum, covering it with the dough made with Turkey wheat, and after a time washing this away with a solution of alum. The strips are now rubbed with grease or suet, to diminish their rigidity, then worked carefully in hot water, curried with a blunt knife, and afterwards dried. They are died red with a decoction of cochineal or kermes, and green with fine copper filings and sal ammoniac, the solution of this salt being first applied, than the filings being strewed upon the skin, which must be rolled up and loaded with weights for some time; blue is given with indigo, quick-lime, soda, and honey; and black with galls and copperas.

Fast Running on the Central Road.

The Central Georgian says: the Express Train on the Central Road, which left Savannah at eight o'clock on Saturday night, with the passengers who came out on the Tennessee, arrived at Tennille at two o'clock, making the distance, 135 miles, in six hours.

[This run was made at night, and it shows that Georgia is not a whit behind any of our Northern States in railroad speed.

Self-Made American Opticians

There are two self-taught men in Massachusetts, who are learned without pretence, and who, were they inhabitants of Europe instead of this Commonweath, would long since have been honored with the fostering attentions of philosophers for their distinguished attainments as Lolland and Fraunhofer were, in the same difficult but exceedingly important department of science, viz., optics.

One is Alvan Clarke, of Boston, a minature painter who has constructed several telescopes under circumstances very unfavorable indeed, partly during those fractions of time when he could not pursue his regular vocation, but chiefly late at night. These instruments are scarcely excelled, and not surpassed by those of the most celebrated foreign manufacturers. Mr. Clarke makes every part with his own hands—grinds and polishes the lenses, and has astonished those who are competent to appreciate the magnitude of his mechanical achievements, in the construction of a really splendid refractor. This, however is only a small part of the marvel. Mr. Clarke is profoundly familiar with the laws of light, and with his own beautiful instruments has made himself as familiar with the permanent and the telescopic objects of the heavens, as with the canvass on which he daily labors for bread.

The other, equally deserving for his moral qualities, mechanical ingenuity, and profound knowledge in the same field of science, is J. B. Allen, of Springfield, a modest, retiring, deserving individual, who, as in the other case, without a patron, without an instructor, and almost without the approving recognition of those who are reputed to be wise above the multitude, has few equals in the domain of optics. He, too, has fabricated excellent reflecting telescopes—and it would be an honor to the great town of Springfield to purchase one of them for the use of the public schools, as the period may come when it will be a boast that Mr. Allen resides there. At the late session of the American Association for the Advancement of Sciences, at Cambridge, Mr. A. exhibited a microscope which he had made.—If we are not misinformed, he had never seen one himself before. It was admired for its wonderful defining powers, and is enough to give him a permanent reputation. Amos Lawrence, Esq., of Boston celebrated for his acts of generosity and encouragement, purchased it at once, and Mr. Allen was elected a member.

[The above is from the Boston Medical and Surgical Journal. It puts us in mind of Gray's incomparable Elegy.

"Full many a flower is born to blush unseen
And waste its fragrance in the desest air."

There is a common factory operative in this State, who can make telescopes, and microscopes of a high order, and who has made some first class optical instruments.

There is another who is a good portrait painter, and has talents of no common order for executing artistic works of art. There may be many more such men walking in the humblest ranks of life. Their chief wants are friends, brass in the face, and brass in the pockets.

American Indigo.

The Indigo plant in a native of South Carolina and it grew spontaneously among its weeds and woods. More than one hundred years ago the planters there commenced its cultivation. In the year 1748 South Carolina exported to Great Britain 200,000 pounds and the Parliament granted a bounty of 12 cents per lb. to induce its greater cultivation. In 1748 when that ordinance was passed, Indigo was one of the staples of South Carolina, and we believe of Georgia also. Now in 1849 not a single pound of Indigo is raised in South Carolina, or as far as we know, in all the South. A plant, which is indigenous to that region, and which in its early cultivation was exceeding profitable, has been driven from existence by the cheap labor of India. Great Britain now pays seven million of dollars a year for Indigo raised in India.

[The above we derive from an exchange, and we must say that we don't believe it. A great deal of indigo is raised for domestic dyeing in South Carolina, and other of our Southern States.

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New Inventions.

Improved Journal Box.

Mr. Nelson W. Clarke, of Independence, Oakland Co., Michigan, has made a very valuable improvement on Journal Boxes, which must in time come into general use. He employs for the bearings of the journal, wood peculiarly prepared, fitted into recesses of two metallic blocks, which are confined into two outside casings, which are coupled together, forming the journal box. The bearing blocks are of such a form that they, with the outside casing, form an oil or lubricating reservoir, which conveys a plentiful and continuous supply of oil to every part of the journal. The journal box is packed like a stuffing box to make it oil tight, and there is a key or follower to adjust the tightness of the packing, thus making a self-adjusting-oil-tight-journal-box. Mr. Clarke has taken measures to secure a patent.

Heal's Patent Process for Purifying Feathers.

We are indebted for the following article to our excellent exchange, the London Patent Journal, Barlow & Payne: "It will be of no small interest to many of our readers. At the present period when the prevailing epidemic is making such fearful ravages, that stringent precautions are absolutely necessary, it may not be ill-timed to draw the attention of the public to the fact, that nothing is more injurious to health than sleeping upon a bed of impure feathers, the ease with which this can be obviated, and the comparative inexpensiveness of the process, will, we trust, induce parties to avail themselves of the advantages of Messrs. Heal's process. The feathers are first placed in what is termed a *steam-cistern*. a chamber of iron, having its floor formed of perforated metal, through which a current of steam is made to enter with considerable force, to fill every portion of the cistern, and thoroughly saturate the mass which it contains. This continues for some time, the effect upon the feathers being analogous to that produced upon metallic substances when exposed to the red heat of a furnace. Every particle of animal matter they contain is fused and driven off being carried away by the steam as it rushes through the mass and escapes by an aperture for the purpose in the roof of the cistern. The feathers, now, of course in a damp state, are next placed in a large hollow cylinder of iron, into which by means of a blowing machine, is carried a rapid current of air, heated by a furnace to a temperature of 300 degrees. This, like the first cylinder, contains a revolving instrument of iron, but having arms, or bars, of iron; and these, driven at a great velocity, pass through and through the mass, thoroughly separate it, and keep the feathers constantly in motion: thus allowing the current of hot and drying air to permeate them freely, and effectually separating every fibre of them, while through a floor of wire-work passes away a large quantity of dust and refuse, which must be disengaged. Lastly, the feathers are placed in a hollow cylinder of perforated metal, in which revolves a "fan," composed of four plates of metal, fixed at equal distances from each other, into a horizontal bar. This is driven with immense velocity making about 900 revolutions in a minute, and carrying round the feathers, with it, the dust not already removed in the drying cylinder is separated by the powerful current of air which is driven through them, and, passing the perforations of the cylinder, is carried away by a drain beneath. By this means the feathers are rendered perfectly sweet, pure, and dry."

New Algebraic Method.

We see it reported that Mr. Cauchy, the eminent French Mathematician, has explained to the Paris Academy of Sciences a new method for the solution of Algebraic equations of whatever degree.

We hope that this report will prove true. We have not so much doubt about it as we have of that wonderful report of the Academy about the men with tails. Give us Paris for discoveries yet.

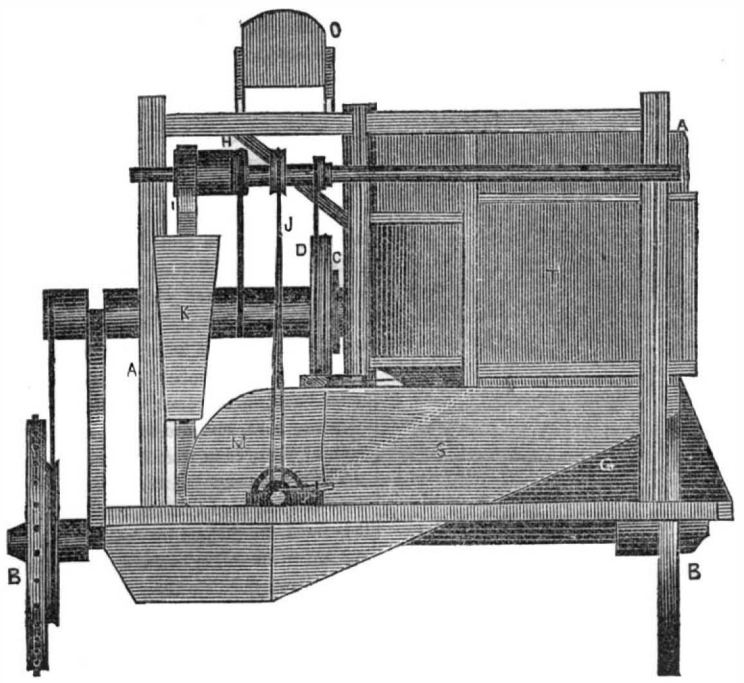
Improved Fire-arm.

We have had our attention called to a new Gun, which is the invention of Mr. Milo M. Cass, of Utica, N. Y. This gun is loaded at the breech with ball cartridge, having chambers for twenty-six charges. It is also capped at the same time that it is charged. These twenty-six charges can be fired in about three minutes without using any particular haste. The cartridge is introduced into the barrel of the gun through the breech-pin, which is constructed something in the manner of a common faucet, being turned one quarter round by a small lever underneath the barrel, and thus admitting the charge, which is thrust forward from its chamber by a small ramrod operating from behind by means of another small lever. This is a very ingenious contrivance, and we should think it admirably adapted to the battle field.

New Paddle Wheel.

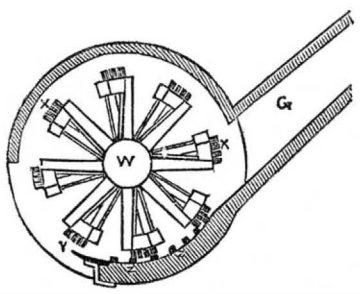
Mr. Abner Chapman, of Fairfax, Vermont, has invented a new paddle-wheel, for which he has taken measures to secure a patent, and which has been represented to be liable to none of the two evils—lift of water and slip in it. The wheel is divided, as it were, on the face, with two wheels exactly alike, with the paddles of a curved winding form, converging from the sides to the middle, forming, with a flange on their extreme edge, a bucket of a horse-shoe form, with a space between the two at the middle of the wheel, for the water to escape.

Figure 3.---Continued from First Page.



threshed stuff is driven to the separating chamber, T, fig. 2, which has a screen bottom, U; through this screen the grain falls down an incline, S, into a receiver, fig. 3. There is a blower, M, which winnows the grain from the chaff, &c., blowing it out at U, fig. 2. K is a spout, on the lower end of which is fastened a bag to receive the clean grain; V is a slide of this spout to shut up the lower opening at pleasure. The clean grain is received into a grainary or receiver below a set of revolving buckets on the broad band, I, fig. 3, the which

FIG. 4



buckets scoop up the cleaned grain, and deliver it into the spout, K. The back view will give a good idea of the manner this is accomplished. The screen in fig. 2 receives a reciprocating motion, like all such screens, by a small sliding arm, worked by a rocking beam, which is moved by cams on the pulley of the blower, indicated by the band, J, passing over it below, O is the seat of the driver. Th uses of the bands and the pulley, H, will be obvious, as seen in the three first figures, to designate their different offices. N is a part of the wagon pole.

Figure 3 being a side view of the thresher, with the case removed, its office will now be rendered more easy of explanation. A section of the case is shown with pins or projections, Z Z, on its bottom; W is the shaft which is driven as has been explained. On this shaft —which is as long inside as the cutter blade— there are a triple set of radiating arms. The centre set are double the number of side arms, so that oblique paddles are fitted on to the arms, as represented; these paddles have projections, X X, on their outer edges, the which projections pass between the projections, Z Z, on the bottom of the case and thus thresh the grain. Y is the cutting blade, which is four feet long, and the arms of the thresher wipe in the grain over the cutting blade.— Small wheels may be placed under the thresher case, and the cutting blade may easily receive a reciprocating motion, if desired. It is intended that the horses should walk on the one side, on the clean cut swath.

From the foregoing a clear understanding will be acquired of the operation, nature, and design of this invention, and more information (*p.p.*) may be obtained of Mr. Rembert at Memphis.

New Way to Make Red Hot Shot.

The Glasgow Chronicle, (Scotch Paper) mentions a peculiar and apparently most valuable mode of obtaining red-hot shot for large guns, recently invented in that city by a Mr. Scouller. The invention consists in the filling the hollow shot with a highly combustible powder. Two or three fuse-holes are made in the shot, so that, when fired from the piece, ignition takes place, and the shot is made red-hot before it arrives at its destination. In that witnessed by the editor, the shot, which was about two inches aud a half in diameter, was simply laid on the ground and the composition ignited by a light applied to the fuse-hole. Violent combustion immediately ensued, liquid fire appeared to stream from its three fuse-holes, and the metal became quite red hot in a few seconds. The inventor states, that when fired from a gun a red heat will be attained in less than 20 seconds from its leaving its mouth. The composition will burn under water, and is said to be easily made.

Patent Oat Flour.

The Aberdeen, Scottish, Journal says: Mr. Smith, factor, for Lord Douglass of Douglass, who attended the show at Aberdeen, exhibited to the members of the committee of the association, and others, specimens of various kinds of oat flour bread, manufactured by his important patented discovery. All parties expressed themselves highly pleased with the quality, flavor, and good color of the bread; and our decided opinion is, that the invention is worthy of the immediate and earnest attention of landed proprietors and farmers, as well as those engaged in the baking trade, and all interested in the progress of British agriculture. The flour of oats has been analyzed by well known chemists, and is found to contain a much larger quantity of nutritious qualities than the wheaten flour, and is calculatod to give a greater amount of nourishment and strength to the muscle, bone, and blood of man. —In carrying out this discovery, there will, we understand, be required but little alteration in the present system of grinding, an advantage that is evident, as the manufaeture may immediately be entered upon by those engaged in the manufacture of flour from wheat. In point of price the benefit will be largely in favor of the consumer, while the invention will create a demand for oats which will be very acceptable to the growers of that grain in the present depressed state of the market.

[It is true, that oats contain more nourishment for the bones of man than wheat, but it is news to us to be told that they contain more nourishment for the muscles and blood. We know not what the above improvements may be, but we think they may be good, and we copy the above article to call the attention of some of our readers to the subject, who live in Canada, or in the northern mountainous districts of the Northern States, where oat meal is used as a part of their food.

The Great Rotary Engine.

A late number of the London Times gives an account of a wonderful rotary engine invented by Capt. Hon. W. E. Fitzmaurice, and a Mr. Hartford. It says, "the engine is very simple, merely censisting of two pieces so mathematically arranged that the interior part works in the outer with the greatest ease, being free from dead points and without the slightest vibration, however great the velocity. It has no springs or packing and the parts meet each other so harmoniously as only to give a humming noise like a spinning top, and it is not in the least liable to get out of order, the wear being perfectly uniform throughout. The entire motion being a rolling instead of a cutting one the engine will last long without repair, as the surfaces become case-hardened in a very short space of time. The trials took place in the presence of several scientific gentlemen and engineers of eminence, in their profession, in a frigate's pinnace, the engine being constructed for the Government."

It also states that it propelled a boat of 30 tons burden at the rate of 8 miles per hour, with a screw, and that an engine of 100 horse power, would only take up a space of 4 by 2 feet; we venture to say that the Hon. Fitzmaurice's rotary engine will soon be numbered with the things that were.

Preparation of Sugar.

The London Standard of the 18th ult., thus comments on the use of the "lead material" in clarifying and refining sugar:

That the acetate or, as it is in the British patent described, the di-acetate of lead," familiarly known to all as "the sugar of lead" of the oil shops, is a deadly poison, must be known to every one. That it is chemically combined with sugar in the patented process (which we assert upon the best authority to be the process in use in Cuba and the Brazils,) is not denied. It may be that a skillful and very careful chemist can separate all the mortal poison from the sugar, with which it is chemically combined, although we have heard that a perfect separation has been found impracticable, four per cent of poison always remaining in the sugar; but be this as it may, the utmost skill and the greatest care are confessedly necessary to relieve the sugar of the oxide of lead.

In France a law passed shortly after the visitation of the cholera in 1832, and passed upon the suggestion of the best chemists of the country, prohibiting universally the employment of metallic oxides in the preparation of any article of food. This law has opposed the introduction of the Cuba and Brazil process into France.

[We believe that there should be a specia law in every country against the employment of metallic oxides in the preparation of any article used as food.

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Scientific American

NEW YORK, OCTOBER 20, 1849.

Great Fair of the American Institute. No. 2.

During the past week, the Fair has been unusually attractive and visited by quite a number of distinguished personages, among whom was Millard Fillmore, Vice President of the United States Republic, N. A. On Friday evening, the Hon. Levi Woodburry delivered the Annual Address in the Tabernacle. He alluded to the boast England made (which we believe never was made) that America had once to come to her *for a mouse-trap*, and he pointed exultingly to the machines and works of art displayed, as a proof of the advancement of America in Manufactures, and works of art. He endeavored to combat the opinion held by many, that, "improvements in machinery, by lessening labor, was an injury to the working classes." He said that "the great improvements which had been made in machinery, instead of destroying labor, had multiplied it." This is true, but the grand object of improvement in machinery, is to relieve mankind from the drudgery of severe and unhealthy toil, and place his occupation in a more intellectual position, viz., to superintend, instead of being the machine.

On last Saturday evening, George Gifford Esq., N. Y., delivered an address on Patent Laws. The audience was small, but select. A copy of it was requested by the Institute for publication. We will notice it when it is published. In one notice (headed New Ball Axle), in our last article on the Fair, we would make a correction, and state that Mr. Alfred E. Smith of 93 Maiden Lane, N. Y., is one of the proprietors to whom orders may be addressed. We would again state that the wheel can be shipped and unshipped in an instant by this invention, without the aid of hammer or wrench. And lest any one should mistake its nature from the title then given it, we would say, as is there explained, that no ball is used to couple, as in the case of Chinnock's, the swell on the axle as stated, is conical.

STILLMAN'S STEAM ENGINE INSTRUMENTS.

There is a case of Steam Engine Instruments, by Mr. Paul Stillman, of the Novelty Works, N. Y., which are of undoubted merit, and which we can confidently commend to all those who require such things. There is a Steam Guage of the usual form, Patent Manometer Steam Guage, Patent Manometer Vacuum Guage, Patent Register, Engine Indicators, &c. For beauty of finish, and correctness of workmanship, no instruments of the kind surpass Mr. Stillman's.

SMITH'S VERTICAL PARALLEL GATE.

The Vertical Gate, about which so much was said, and regarding the operation of which we were decidedly in the dark, from the accounts we had of it, *and as seeing is believing*, so we must say of this *gate*, that it is a very simple and good invention. The inventor is Mr. Lorenzo Smith, of Easton, Mass., and his Agent is Mr. D. Keith of 133 Fulton street, N. Y. The gate is made like two parallel rulers, of four bars, secured to two upright side bars, and by swinging each side leaf of bars upon their axis, they are raised up at the sides, vertically and closely parallel.

LOCKS.

A beautiful and capital lock is exhibited as the invention of Mr. Lewis Lillie, of Ida st., Troy, and sold by Mr. Starbuck, of No. 69 Nassau st., N. Y. This lock is recommended by a great number of bankers and men well qualified to judge of its merits.

SOLAR LAMPS.

A very beautiful kind of miniature solar lamp, for those who have much writing at night, was exhibited by Messrs. Endicott & Sumner. The light of one is equal to that of six sperm candles, and it can burn either oil or lard. A pound of lard lasts about twenty hours. The air is admitted to the flame all around it, inside and out, thus supplying it with plenty of oxygen, consequently there is no part of the flame blue, but all is a bright white light. These lamps range in price from $2 to $2,25.

HYDRO-CARBON GAS.

For some evenings past the machine shop was lighted up with gas made on the premises, by White's invention, which was noticed in our last volume. It was a beautiful light, and was an evidence of the great advancements made in science within the past ten years, as it may be said, it was water burning. The gas is made by decomposing water, by dropping it into a red hot retort, in which there is a chain or pieces of iron, which absorb the oxygen of the water, and the hydrogen escapes into another retort, in which is some resin submitted to fire. There the two gases combine, forming the hydro-carbon gas. From this retort, the gas passes through cooling pipes, and then away to the reservoir. At first, Mr. White did not pass the hydrogen into the resin retort, but mixed them in a separate chamber, but by mixing them in the retort a saving is effected.

ALCOHOLIC VAPOR ENGINE.

A very neat apparatus for heating rooms, &c., was exhibited by Mr. Farewell, as applied to the generating of steam, by the vapor of alcohol. The object of showing it, as thus applied, was to exhibit its nature and the extensiveness of the application, either for generating heat, to boil water, roast meat, to the blow-pipe, or to a lamp for illumination.

The invention is patented by Mr. Thos. K, Anderson, and is owned by Anderson, Farewell & Erwin, of Painted Post, Steuben, Co.. N. Y. The nature of the apparatus is, by its own heat, to generate the substance for combustion sufficient to become a self-feeder. We will publish an engraving of the lamp next week, and say some more about it then.

NEW, OLD, HYRO-STEAM WHEEL.

A gentleman exhibited a wheel contained in a tin case, at the one end of which was ejected a jet of steam, which boiled the water in the tin case, and set the wheel a galloping at no small speed. It is a machine well qualified to wash and boil potatoes at one operation.

OLD FASHIONED BUCKET WHEEL.

On the Bridge there stood for some days (but is now stowed in a corner) one of the old fashioned revolving bucket wheels, which dates back to the days of Cyrus. When we first saw it, a son of Africa was descanting upon its merits with an eloquence which was quite amusing, as it was a subject to which he did ample justice, owing to the dark ages in which it originated.

PIANOS.

Among the many splendid Pianos on exhibition at the Fair we notice one from the manufactory of Messrs. Boardman & Grey, of Albany which has an attachment of a new and peculiar kind, invented by themselves and for which they have secured letters patent. It is called the Dolce Compana Attachment, and gives to the Piano a sweetness of tone, of which we did not think it capable under any circumstances. It can be applied to any Piano, being so constructed as to be attached or detached at pleasure. It is operated by the pedal, and at the will of the performer swells the tones of the instrument loud and full, like the organ, or modulates to the soft and melodious tones of the Æolian. We shall no longer look upon the Piano as a harsh and unmelodeous parlor ornament, as with this attachment of Messrs. Broadman & Grey's it is capable of discoursing most eloquent music. The ladies we know will endorse our sentiments in this matter from the manner in which they flocked around the instrument at the Fair.

Patent Suits.

This month seems to be rife with patent suits. The Case of Blanchard vs. Kimball was to come up before the C. Court in Boston, last week, likewise that of Wilson vs. Barnum, about planing machines at Philadelphia, and that of Morse vs. Bain, before Judge Munroe. An injunction has been applied for by Morse. According to the custom of the Courts of Equity, this cannot be granted, until the validity of the plaintiffs patent has been established at a Court of Law, which has not yet been done.

Scientific Memoranda.

DISCOVERY OF VENTILATION

The London Literary Gazette says that a Dr. Chown of London has enrolled a patent Improvement in Ventilating Rooms and Apartments, for the perfect efficacy of which, we believe, there cannot be a doubt, and on a principle at once most simple and unexpected —the improvements are based upon an action in the syphon which had not previously attracted the notice of an experimenter, viz., that if fixed with legs of unequal length, the air rushes into the shorter leg, and circulates up, and discharges itself from the longer leg. It is easy to see how readily this can be applied to any chamber, in order to purify its atmosphere. Let the orifice of the shorter leg be disposed where it can receive the current, and lead it into the chimney (in mines, into the shafts,) so as to convert that chimney or shaft into the longer leg, and you have at once the circulation complete. A similar air-syphon can be employed in ships, and the lowest holds where disease is generated in the close births of the crowded seamen, be rendered as fresh as the upper decks. The curiosity of this discovery is that air in a syphon reverses the action of water, or other liquid, which enters and descends or moves down in the longer leg, and rises up in the shorter leg! This is now a a demonstrable fact; but how is the principle to be accounted for? It puzzles our philosophy. That air in the bent tube is not to the surrounding atmosphere as water, or any heavier body, is evident; and it must be from this relation that the updraft in the longer leg is caused, and the constant circulation and withdrawal of poluted gases carried on. This action is not prevented by making the shorter leg hot while the longer leg remains cold, and no artificial heat is necessary to the longer leg of the air syphon to cause this action to take place. Extraordinary as this may appear, says the editor, we have witnessed the experiments made in various ways, with tubes from less than an inch to nearly a foot in diameter, and we can vouch for the fact being perfectly demonstrated.

It will take an experiment or two, to demonstrate the correctness of the above, but we point it out in order that some of our readers, (and there are many of them,) who have time to spare, may try a few experiments to test the truth or falsity of this alledged discovery.

ANOTHER GREAT LONDON DISCOVERY.

In one of the late numbers of the London Illustrated News, there is an illustrated description of a wonderful machine to annihilate every conflagration that dares to raise its head. A certain Mr. Philips, it seems, is the inventor, and the Fire Annihilator consists of a small machine, charged with a composition of charcoal, nitre, and gypsum, moulded into the form of a *brick*. There is what is called an igniter, consisting of a glass tube enclosing two bottles, one containing a few drops of sulphuric acid, placed over another containing a mixture of the chlorate of potassa and sugar. This glass tube is placed in contact with the brick, and there is an outside water chamber in connection with the brick. (Who would have ever thought that a brick could knock out the eye of fire here, but London is the place.) Well this simple apparatus is carried to the fire, slung over some stout fellows' shoulders, we suppose, or borne in triumph on a Charley's baton, and no sooner is the fire approached, than by striking the glass containing the acid with a vertical iron pin, it is shivered to pieces, then the acid falls on the sugar and potassa, the brick burns, gases are evolved, and so is steam from the water chamber, and these whisk out the fire in less than no time. We can assure our friends, who have stock invested in building Fire Engines, that we have no fears of their shares falling on account of this invention.

New Dam at Hadley Falls.

This great work is nearly completed, as we learn from the Springfield Republican. We hope that it will stand the shock of the Connecticut, and brave for many years its angry waters, and that its fate may be more glorious than the last one.

Notice to Editors.

Our friends of the "Standard," Greenwich N. Y. inform us by letter that they have not received the Sci. Am. since they published the new prospectus. We thank them for it, and shall consider it a favor from all editors if they will do the same in case they do not receive the paper. We hope not to overlook a single instance. Within the past year a few complaints have appeared in print against us for not sending the paper. We hope not to hear any this year, and if publishers will only inform us of a non-fulfillment on our part, we will promptly forward the paper. We presume that no respectable editors will attempt to complain of us through the columns of their papers when they fail to receive ours in exchange. We have never known an instance.

Patent Office Report for 1848.

We have received another section of this Report. It contains very valuable matter and some good engravings of apparatus used in the sugar manufacture. The information contained in it is mostly agricultural. We like the matter well enough, but here we are nearly at the years's end, and the 5000 copies of the Report with the Patent claims, are not yet issued. This is scandalous, but we believe that it is all the fault of the miserable contract with the printers. The matter of this report is found in very bad company, viz., bad print and paper. We are much obliged to Commissioner Ewbank for this Report—the contents of which we value highly.

What Water can Do.

The Boston Bee says that Abby Hutchinson —that was—is at a water-cure establishment in that city; and is recovering very rapidly, having gained in weight three pounds during the past week. She has lived twenty-one days without taking a particle of food—swallowing nothing during the time, with the exception of cold water.

[If the above don't set a *bee* in some ears, we don't know what will. Just think of Mrs. Paton living 21 days without food. Why talk of miracles ceasing—not while Abby is alive.

New Discovery in Agriculture.

An extraordinary fact mentioned the other day at the sitting of the Academy of Sciences. One of the members stated that the agricultural society of Brest had, upon the proposition of a member of the committee, sown some wheat upon land without any preparation of plowing or digging, and in one of the worst soils possible, and after having merely walked over the ground to press the grain on the surface, had it covered with fresh straw to the thickness of two inches. The product was, it is asserted, more abundant and much superior in quality to wheat raised from the same seed in the ordinary way. Some ears of corn, the seed of which had been placed upon window-glass covered with straw, were also exhibited.

[The above is now fourteen years old, and has proved to be a fallacy. We take the article from a late exchange, to point out the moral.

Riots at Philadelphia.

There was a great riot at Philadelphia last week;—houses were burned, and a number of persons were shot dead, and others wounded. Why does the State of Pennsylvania not throw all the suburbs around Philadelphia, under the jurisdiction of the city proper. It is the most disgraceful place for riots in the wide world, and certainly there is little to boast of in the way of true liberty, where Franklin lived and died. Something should be done, and that quickly, by the State Legislature, for the prevention of such scenes in future.

Centre of Gyration.

We have received a communication on the "Centre of Gyration," which is unavoidably delayed for a week or two, from the number of long communications which we have received before it came to hand.

A Hard Lot.

A Scotch gentleman recently sold 700 shares of the United States Bank, at $2,50 per share the same having been purchased at $127 cash in 1836. His loss was $68,550, besides eigh years interest.

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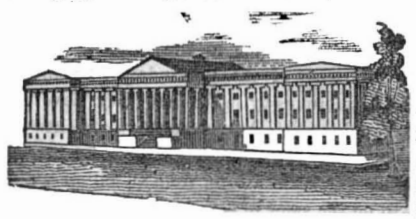

LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending October 9, 1849.

To Calvin Doane, of Wareham, Mass., for improvement in portable Ovens. Patented Oct. 9, 1849.

To William G. Masterson, of Amesbury, Mass., for improvement in Water Wheels. Patented Oct. 9, 1849.

To Thomas Maskell, of Franklin, La., for improved Jointed Centre Board. Patented Oct. 9, 1849.

To James Leffel, of Springfield, Ohio, for improvement in Cooking Stoves. Patented Oct. 9, 1849.

To Charles Wilson, of Williamsburgh, N. Y., for improvement in Hydraulic Presses for Cotton, &c. Patented Oct. 9, 1849.

To Alexander Hall, of Loydsville, Ohio, for improvement in Churns. Patented Oct. 9, 1849.

To Charles G. Sargent, of Lowell, Mass., for improvement in Burring Cylinders. Patented Oct. 9, 1849.

To L. R. Livingston, J. J. Roggen & Calvin Adams, of Pittsburgh, Pa., and Amos Kendall and Alfred Vail, of Washington, D. C., for improvement in Supporters for Telegraph Wires. Patented Oct. 9, 1849.

To Edward Bancroft, of Philadelphia, Pa., for improvement in hanging Shafts in Mills. Patented Oct. 9, 1849.

To Jacob Pritchett, of Philadelphia, Pa., for improvement in Ore Washers. Patented Oct. 9, 1849.

To Henry W. Hewet, of New York, N. Y., for improvements in Reciprocating Propellers. Patented Oct. 9, 1849.

To William Tabele, of New York, N. Y., for improvement in the manufacture of Band Boxes. Patented Oct. 9, 1849.

To William Clarke, of Dayton, Ohio, for improvement in Bed-plates for Paper Engines. Patented Oct. 9, 1849.

To Samuel Campbell of New York Mills, N. Y., for improvement in Lapping Machines. Patented Oct. 9, 1849.

DESIGNS.

To A. Cox & Co., (Assignees of Geo. W. Chambers,) of Troy, N. Y., for Design for Stoves. Patented Oct. 9, 1849.

To A. Cox & Co., (Assignees of Geo. W. Chambers,) of Troy, N. Y., for Design for Stoves. Patented Oct. 9, 1849.

To J. H. Burton, of Cincinnati, Ohio, for Design for Stoves. Patented Oct. 9, 1849.

To Sherman S. Jewett & F. H. Root, of Buffalo, N. Y., for Design for Stoves. Patented Oct. 9, 1849.

To William Savery, of New York, N. Y., for Design for Stoves. Patented Oct. 9, 1849.

To J. Cross & Son, of Morrisville, N. Y., (Assignees of Samuel W. Gibbs, of Albany, N. Y.,) for Design for Stoves. Patented Oct. 9, 1849.

RE-ISSUES.

To Erastus B. Bigelow, of Clintonville. Mass., for improvement in Power Looms for Weaving Plaids, &c. Patented April 10, 1845. Re-issued Oct. 9, 1949.

To Erastus B. Bigulow, of Clintonville, Mass., for improvement in Looms for Weaving Brussels Carpets, &c. Patented March 10, 1849. Re-issued Oct. 9, 1849.

To John Thurston, of Bath Township, Ind., for improvement in Winnowing Machines. Patented Jan. 6, 4848. Re-issued Oct. 9, 1849.

American Female Artists.

We have a Mrs. Spencer, who is a first rate painter, she is a native of Cincinnati. There is a Miss Brown, of Akron, Ohio, who is also an artist and a good portrait painter. Painting is a natural gift to many Americans—they take to it like ducks to water.

Trial by Jury in Patent Cases.—No. 5.

We promised in our last number to give our own views respecting the action of some of the United States Circuit Courts in granting injunctions for alledged infringement of Patents, and we will now proceed to fulfil our promise. In our last number we quoted an article from the Charleston Mercury, citing case upon case to prove that the practice of the English Supreme Court was different from the decisions made by Judge Wayne, in South Carolina, and Judge Kane in Pennsylvania, and the reverse of the opinions set forth by Ex-Governor Seward, that is, "in the court granting an injunction, and assessing damages for plaintiffs, without a trial by jury, when the validity of the plaintiff's patent is questioned, and infringement denied."

The author of the articles in the Charleston Mercury is right, and he is wrong. The opinions and cases which he cites, do not give a clear view of the case, because they go to prove that it is not the custom of the Court of Chancery, in England, to grant any kind of injunction, in any case, upon application made for the same, whereas it is the custom, as we shall prove, in certain cases, viz., where the patentee's title had before been established at law (by jury) or when in long possession of the patent. In the case before Judge Wayne, in Charleston, the patent of the plaintiff had already been established at law, and there was *exclusive possession for some duration.* See Curtis, sections 324-5, and Carpmael on the Law of Patents, page 112. The Court of Chancery, in England, is the place where injunctions are granted, and Lord Eldon said, "The principle upon which the Court acts in cases of application for injunctions, is as follows:—where a patent has been granted and exclusive possession of some duration under it, the Court will interpose its injunction without putting the party previously to establish the validity of his patent by an action at law. But where a patent is but of yesterday, and an application made for an injunction, and there is opposition made to the goodness of the specification, or otherwise, the Court will not grant an injunction, but send the patentee to a court of law to establish the validity of his patent. (Curtis, sec. 324, and Carp. R., vol. 1, page 374; Webster's Digest, case 65.) It is the common custom in the Courts of Equity, in England, to grant no injunction, before the patent has been proven valid at a court of law. No Judge of our Federal Courts would be acting according to the *spirit* of equity, were he to grant an injunction for an alleged infringement of a patent, if the said patent had never been tested, as to its validity at a court of law. But neither the case in Charleston, nor the one in Philadelphia, Wilson vs. Barnum, were at all like any others that ever happened in England, and should not happen here.

We will now undertake to point out the new ground upon which we stand.

The complainants in the cases referred to, were the owners of a twice extended patent on a machine for planing boards. The defendants, in both cases, also owned patents for machines for planing boards. Before the trial in Charleston, in more than one case the owners of the Woodworth patent, (plaintiffs in that case) had obtained judgment that the machine for which Gay secured a patent was an infringement of the Woodworth patent. Now is it right that a man, who is proven to be an infringer by an intelligent jury in one place, to go and set up the same machine in another place, and demand by law a second jury trial on the same issue, because he has merely changed his location? Surely no. In this sense Judge Wayne was right, and in another sense he was wrong, for while Gay owned a patent, it should be respected. Now this is a point upon which we desire to be particular. The whole course of our United States Courts has been wrong in listening to and granting injunctions upon complaint of one patentee against another patentee for infringements. When one man secures a patent, and a patentee believes his patent to be infringed by the subsequent patentee, the course to be pursued, is to test the case according to the 16th section of the Patent Law Act, 1836; and if it is proven that the last patent granted interferes with the first—is an infringement—it should be declared null and void. This is the proper way to settle such things, viz., the conflicting claims of patentees. But is this commonly done? No. Any other course pursued by the Circuit Courts we hold to be illegal. Let us quote the law, to prove our point:

Sec. 16, (Patent Laws.) "*And be it further enacted*, That whenever there shall be two interfering patents, or whenever a patent or application shall have been refused on an adverse decision of a board of examiners, on the ground that that patent applied for would interfere with an unexpired patent previously granted, any person interested in any such patent, either by assignment or otherwise in the one case, and any such applicant in the other case, may have remedy by bill in equity; and the court having cognizance thereof, on notice to adverse parties, and other due proceedings had, may adjudge and declare either the patents void in the whole or part, or inoperative and invalid in any particular part or portion of the United States, according to the interest which the parties to such suit may possess in the patent or the inventions patented, and may also adjudge that such applicant is entitled, according to the principles and provisions of this act, to have and receive a patent for his invention, as specified in his claim, or for any part thereof, as the fact of priority of right or invention shall, in any such case, be made to appear. And such adjudication, if it be in favor of the right of such applicant, shall authorize the Commissioner to issue such patent on his filing a copy of the adjudication, and otherwise complying with the requisitions of this act. Provided, however, That no such judgment or adjudication shall affect the rights of any person except the parties to the action, and those deriving title from or under them subsequent to the rendition of such judgment."

We candidly admit that the one half of this section is very opaque,—it is a badly constructed law, and should be revised; but there is enough in it to bear us out in the position we have assumed. It plainly says, by a bill *at equity, notice to adverse parties*, and *other due proceedings had, the Court* may declare either the patents void in *the whole or in part.* Now is this not plain—is there not enough in this to prove Judge Kane's decision wrong, and other decisions also? It surely does. Our remedy for such evils is to brush up this neglected section of the Patent Laws.

[Remainder next week.]

Atlanta, Ga.

We have received from our friends in this thriving place, the report of a committee upon its manufacturing advantages, which seem not to be inferior to those possessed in any other place throughout the South. We would especially call the attention of capitalists, carpenters, machinists, mill-wrights, cabinet makers, and men of all the different mechanical branches, to some of the statements presented by the committee. The first one of these advantages is the central position that Atlanta occupies and the direct communication with the great emporiums of New York, St. Louis, New Orleans, Mobile, Savannah and Charleston, and all the intermediate towns and cities, it not being more than four days run to the farthest of them. A second advantage that Atlanta has as a site for manufactures, is that it is now the intersecting point of three railroads, and a fourth will soon be completed; and if only one-fourth of the capital was employed in manufactures that the place would authorise, a fifth (the Gainesville road) would soon be built, giving the unsurpassed advantage of five railroads, all centering at one point, for bringing in the raw material and sending out the manfactured article to every point of the compass and to all the leading markets of the Southern States.

Atlanta is already the market for the agricultural products of a region of country extending into the borders of some of the adjoining States, and her trade is every year increasing. Here is a wide door already open for the sale of the fabrics of the factories of your city, and the greater the variety of them, in the way of cotton, iron, wood, wool and leather, the greater the inducement to customers; for they will always go, in the greatest numbers, to the point where the greatest variety can be had.

The committee also represent the city of Atlanta as being pre-eminently healthy, with excellent water, and scarcely a swamp marsh or pond for several miles around. They advocate the advantages of erecting steam mills as the fuel for generating steam is abundant and cheap for miles around, and can be easily transported over the different railroads, that concentrate at this place. We rejoice to see our Southern brethren awaking to the importance of stimulating manufacturing and mechanical enterprize to come among them. There is no good reason why the North should be so much in advance of the South, in the great manufacturing interests. The field is open for larger operations in every branch of the arts, and the interests of the South and West demand that their resources should be developed.

That Fossil Ape.

The last Scientic American makes the following strange editorial announcement:

"A fossil ape is said to have been found lately in the upper tertiary stratum at Montpelier, Vt. This is an interesting fact, taken in connection with the fossil elephant discovered by Prof. Agassiz, in New England."

This is the first word that we who have always lived here on the ground ever heard of such an affair. We may have living apes among us, perhaps—such as have been imported from the cities—but no fossil ones. There was never any thing indigenous of the ape kind in Vermont, either man or brute, to become fossil. Where did the editor pick up this queer piece of information?—[Vt. Green Mountain Freeman.

"We expect he meant to 'come' a joke on the Montpelier boys—or, perhaps, get up a take off' on priest Thompson's fish and Agassiz's elephant."—[Vermont Family Gazette.

[The Editor of the Green Mountain Freeman is not so green as he pretends to be on the subject. He knows well enough that Vermont is the most wonderful State in the Union. Was it not there where Capt. Thunderbolt lived and died with his sham leg and all that? And does he not know that the Green Mountains, as geologists say, were away over by Africa, or some such place, with monkeys and apes running helter skelter up and down the great big cocoa nut trees, in

> "Those days of lang syne,
> When geese were swine,
> And pigeons chewed tobacco?"

To be sure he does; so he need not be quizzing us. Did not Josiah Priest prove that Orange County, N. Y., was once the Garden of Eden, from an old stump that was found there? Surely he does. Well, then, he need not be a bit surprised because he did not see the *fossil ape*, for we are not, *and we han't seen it, neither.*

Taxation for Free Schools.

The people of Indiana have declared in favor of taxation for the benefit of Common Schools. The amount of tax is to be ten cents on each hundred dollars' worth of real and personal property. The property of the State being $140,000,000, the tax will be, next year, $140,000. In adition to this are the profits of the bank stock; the surplus revennes, and Saline funds; and three dollars on every policy of insurance on property within the State, by companies not chartered by the State. The sources will yield about $200,000, which added to the sum derived from taxatation, will make $340,000. To this are to be added all fines for violations of the penal laws, forfeited recognizances, and the interest of monies derived from the sale of school lands, which will swell the entire yearly fund for Free School purposes, to $500,000. This is a magnificent sum.

Expensive Shirt Bosoms.

The latest fashion of shirt bosoms introduced into this city are of fine linen cambric, laid in broad plaits, and ornamented with three rows of rich French embroidery. They cost about $12 each, and it has been observed that few who make them wear them.

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TO CORRESPONDENTS.

"R. P. C. of Geo."—We are glad to hear that you have derived so much benefit from an attention of this paper. We particularly commend it to the attention of the young men of your place. They will find much information in its columns that will be a benefit to them in any position.

"J. T. of Mass."—Regarding the quantity of gas consumed per hour it depends upon the size of the burners. The common burner consumes about one cubic foot per hour, and one gallon of whale oil makes 90 cubic feet. There is however a far better apparatus than the one described, in Parnell's work—besides, the above plan contains no way of purifying.

"J. W. K. of N. H."—We published in volume 2 of the Sci. Am., the rule referred to by you. $4 received.

"N. M., of C."—We have forwarded all the back numbers you ordered, that we had on hand. One half of a volume would be of no value to us. In regard to the fan blast, we think it always best to have it as near as possible to the cupola. Straight pipes are undoubtedly the best.

,, M. J. E., of N. Y."—Your plan, as a substitute for the crank, is not new. You will find it described in *Hebert's* work. We do not understand your first question. What kind of a valve do you mean. There are a great number of kinds, such as ballance valves and slide valves, &c. There are some of the spring packing of iron. It answers very well, but any good steel will answer better. We like a cylinder not of too great length of stroke, but we could not say what is a long and what a short stroke. It all depends on the bore of the cylinder.

"W. F. M. of Ala."—Four numbers of Ranlett's Architect were forwarded by mail, on the 12th inst. The bound vol. 3, will be sent to Mobile by the St. John, which sails on the 17th.

"A. F. of Tenn,"—We forwarded two numbers of Ranlett's Architect on the 12th.

"H. W. P. of N. Y."—Your statement is right and compares with our books. The remaining numbers of Arnott's Architecture will be issued together, between this time and the 1st of January, and will all be forwarded at one time to the subscribers. Leonard's Principa sent by mail.

"Rev. L. J. of Ind."—You can order Vol. 4 bound for $2,75. It cannot be supplied complete in sheets.

"S. C. K. of Wis."—Ranlett's work on Architecture is considered by us as the best adapted to your wants, it comes at 50 cents per No.—20 Nos. complete the work.

"G. N. H. of Ky."—Can be furnished with Vols. 3 and 4 bound. Price $2,75 per copy. We do not know of anything at present that would answer the purpose indicated in your letter. Nothing seems to take now a days, except it be got up on the most extensive scale.

"A. C. G., of Mass."—The case refered to by you was decided by Judge Cranch in 1846. It established the claims of Ziba Parkhurst as being the first inventor of the application of the zig-zag or pointed guard to the burring machine.

"J. C. F., of N. H."—Wrote you by letter on the 15th inst., giving our views in regard to your carriage wheel.

"B. F. R., of Ala."—The fan is preferred for the blast furnace, but we cannot tell you now where one can be obtained. We shall make enquiries and write you the full particulars sought for. We are very much hurried just now.

"A. R. R., of Miss."—Mr. C. B. Hutchinson of Waterloo, N. Y., has an excellent stave cutting Machine. (See engraving and description in No. 2, of this Vol. which has been sent you with all the back numbers.)

"J. R. & Co., of Ohio, and J. C., of Ind."—We have forwarded, as per your order, 1 copy Cook's Condensing Engine Plate and Book, 2 numbers of Ranlett's Architecture.

"J. M. W., of Mass."—Your ideas are new to us, but we doubt their usefulness; floats are used for the very purposes you intend to accomplish, by the oscillating boiler, and would in our opinion be less liable to get out of order. We cannot conceive any gain from your plan. The fartherest way round is not the nearest way home.

"T. A. T., of St. Louis."—The question at issue is one of peculiar interest, and it will be necessary for us to give it an extended examination. We shall communicate our views by letter in a few days. Your reasoning in the matter savors too much of bitterness against the examiners in the Patent Office.—They are not perfect however by any means.

"H. D., of N. Y."—India rubber is made from distilling india rubber in a retort. A good tooth wash is a solution of borax and common salt. A little finely powdered charcoal is as good a tooth powder as you can use. It is not easy to tell which is the best liniament. We could not do it—one will do well for one thing, but not for another: Opodeldoc is almost as good as any: the great secret is to use it as material to assist the hand in rubbing the sprain, which should be done gently, patiently and often.

"H. C. G., of N. Y."—We cannot better answer your enquiry, than by giving the law in relation to models which reads thus: "Every application must be accompanied by a model, when the invention admits of one. It must be neatly and substantially made, of durable material, and if possible not over one cubic foot in contents. In case models are made of pine or other soft wood, they should be painted, stained or varnished. The name of the inventor (and assignee, if assigned) must be printed or engraved upon, or affixed to it, in a durable manner."

A. P. of N. Y., P. Van B., of N. Y., N. W. C., of Mich., J. D. T., of Ct., C. & B., of Mass., and W. R. C., or N. C,—Your specifications have bean lodged in the Patent Office since our last issue.

Money received on account of Patent Office business, since Oct. 10, 1849 :—

D. T., of Mass., $10; A. L. of Me., $30; T. F., of Mass., $20; A. P., of N. Y., $20; N. & Co., $20; G. W M., of Tenn., $20; P. Van B., of N. Y., $20; T. P., of N. Y., $20; W. B., Jr., of N. J., $30.; N. W. C., of Mich., $25; M. F. H., of Ala., $10; L. M. H., of Pa., $30.

A few of our correspondents must not feel displeased, because they are not yet answered. It is not easy at all times to answer some questions and get some kinds of information.—We take a good deal of trouble however to do these things.

We are much obliged to Geo. Gifford, Esq., of this city for a copy of the decision of Judges Nelson and Betts in the case of S.R. Parkhurst vs. Kinsman & Goddard, in relation to an agreement in the use and manufacture of the Patent Burring Machines of Parkhurst.

We have received a communication from *Junius Redevivus* on the Convention of Inventors at Baltimore. We will give it a place as soon as possible.

We want some grand subject in this city to make an excitement just now. If something does not come upon the carpet soon there will certainly be deaths in the editorial camp.

ADVERTISEMENTS.

Patent Office.

128 FULTON ST.

NOTICE TO INVENTORS.—Inventors and others requiring protection by United States Letters Patent, are informed that all business relating to the procuration of letters patent, or filing caveats, is transacted at the Scientific American Office, with the utmost economy and despatch. Drawings of all kinds executed on the most reasonable terms Messrs. Munn & Co. can be consulted at all times in regard to Patent business, at their office, and such advice rendered as willenable inventors to adopt the safest means for securing their rights.

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THE YANKEE BLADE.—A large and handsomely printed Weekly Journal, devoted to Literature, Art, Education, Morals, Criticism, Fun, News and Story Telling—and especially desirable to the Family Circle. Published every Saturday, at $2 per annum, in advance.

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N. B.—Any person desirous of receiving a copy of the Yankee Blade," as a sample, can be accommodadated by notifying the publishers by letter, post-paid.

OPINIONS OF THE PRESS.

THE YANKEE BLADE.—Our readers need not be told that the Yankee blade is an excellent paper. The fact is known and undisputed among all communities into which the paper has been introduced and wherever the name of Mathews, its worthy and accomplished editor, has been made familiar. It gives us pleasure to notice that the labors bestowed on the Blade are justly appreciated by the reading public, and that the editor finds consolation and reward, as well in its popularity, as in the more substantial evidences of friendship and patronage. Very recently, the Blade came to us as bright and shining, and as clear of the least particle of rust, as though it had never before been in use, and when we took it up and turned it over and over, examining its smoothness and keen glittering edge, we could not feel less than gratified at the success of our Yankee friend, and could not do less, the first opportunity, than express all that we felt.—[Godey's Philadelphia Dollar Newspaper.

HOLDEN'S DOLLAR MAGAZINE. The present proprietor of this popular Magazine in continuing its publication, is determined that it shall lose none of its merits and attractions which it possessed under its former one, and which has made it so desirable a Periodical for Family Reading. It is made up of Tales, Translations, Essays, Biography, Poetry, Sketches of History, Sentiment and Humour, Reviews, Criticisms and Topics of the month, by writers of the highest order of talent and its literary merits are unsurpassed. It is furnished at the low price of One Dollar a-year, in advance, the yearly volume containing 768 pages, making it the best and cheapest Dollar Magazine published. Five copies will be furnished for $4, and twenty copies for $15. Letters must be addressed, HOLDEN'S DOLLAR MAGAZINE, No. 109 Nassau Street, New York, (post-paid). Money may be sent at the risk of the proprietor, provided a description of the bills are kept, and mailed in the presence of the postmaster as evidence of the fact.

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4 1m* Proprietor.

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4 3m* EMANUEL PARKER.

ENGINE LATHES.—The Subscribers are now manufacturing, and have constantly on hand, an extensive assortment of the best patterns of Engine Lathes, which they offer at the following prices:—A Lathe 8 feet long, swing 19 inches, with back and screw gearing, drill chuck, centre and follow rest, $200; ditto, without screw gearing, $150; ditto, without fixtures, $125. For particulars of other sizes, address, (post-paid) SCRANTON & PARSHLEY, New Haven, Ct.

Munn & Co., Scientific American Office, are Agents for the above Lathes. Universal Chucks for sale at $15. 4. 3m.*

NOTICE TO CAPITALISTS.—We are authorized, by a company in the State of Ohio, to call the attention of those interested in the manufacture of flour and woollen goods, to the sale of a large and well established concern in one of the best regions of the great State. The ill health of the partners compels them to retire from business. The full particulars in relation to the above property, may be had by personal application to the subscribers, or by letter, post-paid. MUNN & CO.,
3 6* 128 Fulton st., N. Y.

DAGUERRIAN MATERIALS.—JOHN ROACH, Optician, 79 Nassau st., N.Y., is manufacturing American Cameras of imported Flint Glass, which are warranted equal to any. Also, on hand, Voightlander Cameras. Plates, Cases, Chemicals, &c. Galvanic Batteries for gilding and silvering. Electro Magnetic Machines for medical purposes. Thermometers wholesale and retail. Object Glasses of various sizes, ground to order and warranted achromatic. 2 10*

LAW'S NEW PLANING MACHINE.—For boards and plank, is now in operation in this city—planing, tonguing and grooving at the same time, with rapidity and beauty. It is believed to be superior to any other machine, as it will do the work of two or three rotary machines, and for all Southern, and the majority of Northern lumber, the execution is much better.

Machines, with rights for States, or Counties, can be had by applying to the subscriber, at 216 Pearl street, or at Collyer & Dugand's mill, foot of West Fourteenth street, where the machine is at work.
2 tf H. LAW.

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Augusta, Me., Oct. 28, 1848. o28 1y

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Scientific Museum.

For the Scientific American.

Elastic Force of Steam.

No one can fail to recognize a certain degree of regularity in the progress of the increasing force of vapor as the temperature is successively augmented. In the dilation of aeriform fluids, Nature seems to affect a certain law. From experiments, it is inferred, that equal increments of temperature produce nearly equal multiplications of bulk; that the temperatures being in arithmetical progression, the corresponding elasticities are nearly in the continued proportions of 1 to 2; thus:

Temperatures - -	100°	130°	160°	190°
Correspondent elasticities - - - -	2.19	4.97	10.21	19.43

Although the re-duplication does not proceed with a constant regularity, still it is satisfactory to know that the deviation from this progression is itself the subject of a tolerably simple law. Many have been the endeavors made to form adequate representations of the mathematical law which connects the elastic force of steam with its temperature. Formulæ have been obtained by Robinson, Dalton, Prony, Laplace, Biot, Ivory, Schmidt, Soldner, Koche, Young, Creighton, Southern, Tredgold, Coriolis, Dulong, Arago, Committee of the Franklin Institute, Russel, Regnault, and recently by Alexander of America. But nearly all of them are inaccurate at high temperatures. Tregaskis has given a theorem: that one-fifth of the temperature above 32 degs. added to vapor, will double its elasticity. It furnishes a rough approximation to experiment. The formula obtained by Alexander for ascertaining the tension of vapor of water at any temperature, agrees more closely and consistently with observations than any other.

p=pressure in inches.

t=temp. in deg. Fahr.

$p = \left(\frac{t}{190}+\frac{990}{1695}\right)^6$; and

$t = 180\ \sqrt[6]{p} - 105^\circ\ 13'$.

By this equation it appears that the pressure of steam in inches of mercury at 100° is 2.19; at 200°, 23.73; at 212°, 29.91; at 300°, 130.02; at 350°, 297.74.

From the many formulæ obtained by different philosophers, have been deduced the following:

Rule—To find the pressure corresponding to any given temperature of steam above 212 degs.: To the temperature add 121 degs., from the logarithm of the sum subtract 2,5224442, and multiply the remainder by 6.42—the product is the logarithm of the pressure in atmospheres of 30 inches of mercury.

Rule—To find the pressure corresponding to any given temperature of steam below 212 degs.: To the temperature add 175 degs., subtract 2.587711 from the logarithm of that sum, and multiply the remainder by 7.71307—the product is the logarithm of the pressure in decimal parts of an atmosphere.

Rule—To find the temperature of steam, having any given pressure greater than that of the atmosphere: Multiply the logarithm of the pressure in atmospheres by 0.1557634, and add to the product 2.5224442—the sum is the logarithm of the temperature.

Rule—To find the temperature at which steam will have a given elastic force less than that of the atmosphere: Multiply the logarithm of the pressure in decimal parts of an atmosphere by 0.12965, and to the product add 2.587711—the sum is the logarithm of the temperature.

J. W. O.

Fatal Steamboat Accident.

As the steamboat Isaac Newton was receiving her passengers one night last week at Albany, an elder Quaker gentleman from Putman county, while attempting to pass from the wharf to the boat, was crowded off or stepped from the plank, and was swept out of sight in a moment by the tide. All efforts to rescue him proved in vain. His afflicted wife, who but a moment before was leaning on his arm, returned from the boat a widow, without a single acquaintance in Albany!

[When will the steamboats be taken in tow by the public and made to have better harbor regulations.

Hollow Iron Moulding.

Pit sand mixed with fresh sand in general is the substance used without coal powder, for dry sand moulding. When mouldings are finished they are placed into drying stoves or ovens, and exposed to a strong heat till their moisture is banished. These moulds are good to allow the gases to escape readily, and castings from them have a smooth surface.

Fig. 1.

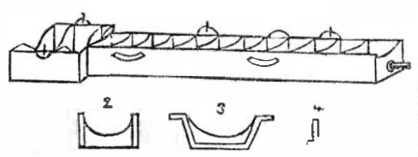
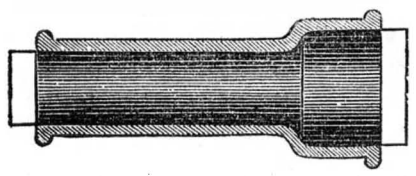


Fig. 1 is a view of one-half of a moulding-box for pipes, the other half being an exact counterpart. Fig. 2 is a cross section, showing parallel sides. Fig. 3 is a similar section of a wedged-shaped box for heavier castings. It is formed with flanges along the sides, which meet those of the other box. By means of these flanges the two halves are bound together by glands. Fig. 4 is a cross section of a flanged rib. A pair of swivels is attached to the ends of each box, by which they are raised and inverted as occasion requires. Another pair is usually fixed on the middle of the sides, upon which, when the boxes are hung, they may turn in a direction perpendicular to the preceding, that they may set vertically at their destined position, which is commonly in a pit dug to receive them.

Fig. 5.



Pipe moulds are always either set upright on one end, or laid in a position very considerably inclined, on a bed of sand prepared for the boxes, at an angle of 30 deg. to 40. deg. When practicable, the larger sizes of pipe moulds are placed in a vertical position, as well as other comparatively tall articles; the general object being to raise all the slag that collects on the surface of the iron, while being poured, clear off the cast into the gate-way, securing thereby soundness to the cast. It is evident that, were pipes, for example, cast horizontally, the metal, at any given period in the running, would expose a large horizontal surface, which is unfavorable to the soundness of the casting, and impurities besides would infallibly lodge in the upper portion of the mould. Both of these objections are removed by setting the mould in an inclined or a vertical position.

Fig. 6.

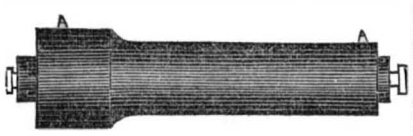


Fig. 5 is a longitudinal section of a pipe, in which the exterior and interior outlines are represented. The lines at each end indicate the additions necessary in the pattern as core-prints. Accordingly, Fig. 6, represents the core as formed upon the bar before described, the core being prolonged to be supported in its bearings formed by the pattern, though it matters not if it should be longer than necessary. Fig. 7, represents the core-bar with its pivots at the ends, and the vent holes scatteted over its surface.

In the constructing of pipe moulds, as well as the moulds of all other large hollow articles, it is necessary that the core be both rigid and porous; these conditions are obviously necessary, when it is remembered that the least flexibility in the core must alter the thickness of the casting; besides, that the core, being itself so much confined externally by the liquid metal when poured, the ends alone serving as channels of escape for the interior air, must offer within itself facilities for the escape of the gases generated. Both of these objects are accomplished by employing a tube of iron, forming the centre of the core, and perforated at regular distances for the escape of the air. For the smallest sizes of cores common gas-pipes are used, with holes drilled in them at about nine inches distance, on alternate sides. Wrought-iron tubes of a larger size are employed for larger pipes; and, for the largest sizes, cast-iron pipes are adopted, with rows of oblong holes cut at equal distances for ventilation. These cast-iron *core-bars*—the general appellation to all the varieties enumerated—have wrought-iron double knees fitted and bolted to their extremities for the purpose of sustaining journals or bearings, upon which they may be turned on their own axis. The hollow ends of the wrought-iron pipes are formed square to receive a winch by which they also may be made to turn upon themselves, the use of which operation will be explained hereafter.

Fig. 7.

Scientific Art.

The day when men practised the various processes of the arts by the light of hereditary experience are just at their close. Famous recipes, the heir-looms of successive generations, are daily becoming less and less valuable. And now, toward the middle of the nineteenth century, behold the birth of scientific art. Until now there was not such a thing dreamed of as a reduction to principles, of the various manufactures into which chemistry enters, and in the success of which she plays so important a part. Did the great grandfarther, after years of toil, and thousands of vain, because unscientific experiments, light on a valuable discovery at last? Then, each generation down cherished the precious document, or committed it on the dying couch, fenced round with solemn adjurations, to the superstitious reverence of the next. And men were thus content to plod the beaten track, as little troubling themselves as to the laws whose guidance they were following, as he who fortuitously hit, after countless failures on the right method atlast. Long after chemistry received all the character and aspect of a science, experience was still the guide of the arts; and though, doubtless, generally a safe, and also a slow, and sometimes a most extravagant companion. The blind led the blind, and the ditches into which they sometimes fell, were both deep and miry. Experience knew a way to the desired end, but in comparison with what it might have been had science marked it out, it was as a cross-country scramble to the straight and level penetration of the rail.

City Life.

Mr. Lyell say:—I have often mentioned the absence of smoke as a striking and enviable peculiarity of the Atlantic cities in a moral point of view, I regard freedom from smoke as a positive national gain, for it causes the rich and more educated inhabitants to reside in cities by the side of their poorer neighbours, during a longer part of the year, which they would not do if the air and the houses were as much soiled by smoke as Manchester, Birmingham, Leeds, or Sheffield. Here the dress and furniture last longer and look less dingy. Flowers and shrubs can be cultivated in town gardens, and all who can afford to move are not driven into the country or some distant suburb. The formation of libraries and scientific and literary institutions, museums, and lectures, and the daily intercourse between the different orders of society—in a word, all that can advance and refine the mind and taste of a great population, are facilitated by the contact of the rich and poor. In addition, therefore, to the importance given to the lower and middle classes by the political institutions of America, I cannot but think it was a fortunate geological arrangement for the civilization of the cities first founded on this continent, that the anthracite coal fields were all placed on the eastern side of the Allegheny mountains, and all the bituminous coal fields on the western side."

Meteorological Observations.

A system of meteorological observations will soon be commenced under the supervision of Proff. Henry, of the Smithsonian Institute, who was here a few weeks ago about the instruments.

This State has taken the lead in this scientific enterprise. New York State is also pursuing the collection of historical documents, with a spirit and liberality (by patronage of the Legislature) worthy of all praise.

Floatng Bee-House.

In lower Egypt. says Dr. Bevan, where the flower harvest is not so early by several weeks as in the upper districts of that country, the practice of transportation is carried to a considerable extent. About the end of October, the hives after being collected together from the different villages, and conveyed up the Nile, marked and numbered by the individuals to whom they belong, are heaped pyramidically upon the boats prepared to receive them, which floating down the river and stopping at certain stages of this passage, remain there a longer or shorter time, according to the produce which is afforded by the surrounding country. After travelling three months in this manner, the bees having culled the perfumes of the orange flowers of the Said, the essence of roses of the Facium, the treasures of the Arabian jessamine, and a variety of flowers, are brought back, about the beginning of February, to the places from which they have been carried. The productiveness of the flowers at each respective stage is ascertained by the gradual descent of the boats in the water, and which is probably noted by a scale of measurements. This industry produces for the Egyptains delicious honey and abundance of bees wax.

LITERARY NOTICES.

The Water Cure Journal is a valuable periodical for illustrating the nature of the Water Cure, and spreading abroad useful information relating to health, life, and happiness.

We have received from Mr. Peterson the November number of the Ladies' National Magazine. It contains 8 original embellishments, and 12 extra pages of fine letter press.

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